REMARKS

The Office Action of January 24, 2006 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested. Claims 1-64 are canceled without prejudice or disclaimer. Claims 72, 91, 103, 112-115, and 118 have been amended. Claim 129 has been added. Claims 65-129 remain pending.

Claims 103, 112, 113, and 118 have been amended to place the claims into independent form. Claims 72, 91, 114-115 have been amended to further clarify the scope of the claims. New claim 129 has been added by this amendment. The amendments and additional claim are fully supported by Applicants' original specification and drawings and does not add new matter.

Claims 65-128 stand rejected under 35 U.S.C. § 112, second paragraph for allegedly failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants respectfully traverse.

Regarding independent claim 65, the Action alleges that, "[i]t is unclear how a datagram can be forwarded from a node to a destination mobile IP node without being aware of the destination address, which is part of the Mobile IP protocol." Specifically, the Action requests further clarification and description.

In response to the request of the Action for further clarification and description, a brief description of how IP networks, and the Internet, work follow. This explanation is merely provide to illustratively describe example conventional systems and is not intended to by limiting to aspects of the present invention. Within the Internet environment, when a recipient endpoint is plugged into a local area network, the recipient endpoint uses the Address Resolution Protocol (ARP) to make the local destination router, and other endpoints connected to the same subnet, aware that its layer 3 IP address can be reached using the associated layer 2 MAC address. The local destination router then inserts this IP address in a routing protocol, such as Open Shortest Path First (OSPF), in order to make neighbor routers aware of the accessibility of the recipient endpoint through the local destination router. This publishing using a routing protocol may continue to a next layer of routers until all local sender routers are aware of the accessibility of the recipient endpoint. Due to the mesh nature of an IP router network, there may be the situation that a local sender router might have several routes, e.g., path options, available to send

a datagram to a recipient endpoint. The local sender router uses the weight, e.g., priority, of a route to determine the preferred path, e.g., nexthop router, to select for sending the datagram towards the recipient endpoint.

The sender endpoint is aware of the recipient endpoint IP address before sending the IP datagram to the local sender router. How this is achieved is dependent on what application is applied, but a general mechanism for obtaining the recipient endpoint IP address exists in the Internet called the Domain Name Service (DNS). A sender endpoint may send a query to the DNS server in order to get back the IP address that is associated with a recipient endpoint's user name. In some situations, the sender endpoint only gets back an IP address to an application server, such as a user directory, in which case the sender endpoint needs to make a 2nd query to that application server before being able to send IP datagrams towards the recipient endpoint. Such is an example situation for peer-2-peer voice over IP (VoIP) services.

Traditional Mobile IP adds a tunneling mechanism so that a recipient endpoint, such as a Mobile Node, does not ARP for its IP address towards the local destination router, but rather the ARPing is done by the Home Agent on its own local area network and associated with its own layer 2 MAC address. As such a router associated to the same subnet as the Home Agent now takes the role that, in the traditional Internet, was given to the local destination router and publishes the reachability of the recipient endpoint IP address, such as the Mobile Node IP address in Mobile IP standard terms. Such may be accomplished using known Internet techniques of a routing protocol, such as OSPF.

As such, the sender endpoint, or Correspondent Node in Mobile IP standard terms, and the local sender router are not aware of the Mobile IP protocol and are treating the Mobile Node IP address as any other recipient endpoint IP address on the Internet. The sender endpoint may determine the IP address of the Mobile Node in the same manner using DNS as it may determine for any other recipient endpoint on the Internet. The local sender router routes the IP datagrams based on the weight of the received OSPF route as for any other published Internet route. In standard Mobile IP, the preferred route always leads to the Home Agent, which then tunnels the IP datagram using Mobile IP to the Mobile Node. In an alternative, the IP datagram may be optionally tunneled via a Foreign Agent placed on the local destination subnet.

However, in accordance with aspects of the route optimization techniques of the present invention, a mobile node and the foreign agent in another embodiment also publish reachability

of the recipient endpoint IP address using standard Internet techniques (ARP and OSPF) in addition to a home agent. The sender endpoint and the local sender router see this as another possible route to use and determines, based on its weight, if it should use this "direct" path as opposed to proceeding via the home agent "path" using its standard routing table logic. As such, a correspondent node is aware of the mobile node IP address, but merely sees it as any other Internet recipient endpoint IP address and is not aware of anything related to mobile IP tunneling that happens between a home agent and a mobile node, or optionally via a foreign agent, and as such related to the mobile IP protocol.

Applicants submit that there is support in Applicants' original written description and drawings again for this description. For example, Applicants' original written description states that for RFC2002 Mobile IP, the "Correspondent nodes 4 (CN) send IP datagrams to a mobile node at its home address in the same way it would with any other destination." (Applicants' original written description, p. 10, ll. 4-5). The mobile IP procedure to hide the temporary care-of IP address for the correspondent node is explained in Applicants' original written description as well. (See p. 2, l. 32 to p. 4, l. 9). The cited portion of Applicants' original written description describes how in order for a correspondent node to reach a mobile node without having knowledge of the visited subset of the mobile node, the home agent will receive the datagram destined to the stable address of the mobile node and send it on to the mobile node using an IP tunnel with the outer destination IP address equal to the temporary IP address of the mobile node. IETF RFC2002 further allows for the addition of a foreign agent in the visited subnet. Under such a situation, the foreign agent sends its IP address on the visited subnet to the home agent as the temporary mobile node IP address and the IP tunnel will be between the home agent and the foreign agent only, while the communication between the mobile node and the foreign agent relies on the link layer protocol address, e.g., MAC address in case of Ethernet.

As explained in Applicants' original written description, datagrams sent from the correspondent node at position CN 4a and CN 4d are routed via the home agent, while datagrams sent from the correspondent nodes CN 4b and CN 4c are routed directly towards the foreign agent. (Applicants' original written description, p. 11, l. 32 to p. 12, l. 16). In particular, "[t]his static route 3' favors a direct route to the visited subnetwork 8 for the mobile node 3 IP address, for traffic from the correspondent node 4b and 4c." (Applicants' original written description, p. 12, ll. 12-13). Datagrams for the different correspondent node positions are not dependent on

any changes in the correspondent node. The correspondent node is always sending packets towards the stable mobile node IP address. The difference occurs in the publication of a route (mobile node associated to nexthop IP address) for the mobile node IP address from the foreign agent (nexthop address) into the routing infrastructure. From the definition of correspondent node, it is an endpoint on the Internet that initiates sending of datagrams rather than a router that is forwarding datagrams.

A correspondent node is aware of the stable IP destination address of the mobile node and sends datagrams to that address. One difference with respect to mobile IP RFC2002 procedures for correspondent node positions CN 4b and CN 4c is that the foreign agent (and in the case of co-located care-of-address mode, the local router in the visited network) receive its routing tables updated with a new routing entry with a lower cost (i.e., more preferred) than the one published by the home agent for the stable mobile node destination IP address. This new routing entry is for the same mobile node stable destination IP address but with a next hop set o the interface of the foreign agent (or router) to which the mobile node is visiting.

As is clearly provided above, Applicants submit that there is sufficient basis in the original written description and drawings for particularly pointing out and distinctly claiming the subject matter in claims 65-128 to overcome the rejection under 35 U.S.C. 112, second paragraph. Applicants respectfully request withdrawal of the present rejection for at least these reasons.

Claims 65-128 stand rejected under 35 U.S.C. 102(e) as being anticipated by Comstock (U.S. Patent No. 6,452,920, hereinafter referred to as *Comstock*). Applicants respectfully traverse the rejection.

In order to reject a claim under 35 U.S.C. § 102(e), each and every feature must be described in within the applied reference. Applicants' independent claim 65 recites, among other features, "wherein the correspondent node is unaware of the mobile IP protocol." As described above with reference to the rejection under 35 U.S.C. § 112, second paragraph, *Comstock* describes the traditional Mobile IP where a local sender routes IP datagrams based on the weight of the received OSPF route as for any other published Internet route. As with standard Mobile IP, the cited portion of *Comstock*, col. 5, l. 67-col. 6, l. 6) describes how the preferred route will always lead to the Home Agent, which then tunnels the IP datagram using Mobile IP to the

Mobile Node, or optionally via a Foreign Agent placed on the local destination subset. As such, and traditionally under Mobile IP, a *Comstock* node is aware of the mobile IP protocol.

Therefore, because *Comstock* fails to teach each and every feature of Applicants' claim 65, withdrawal of the rejection under 35 U.S.C. § 102(e) is respectfully requested. Applicants' dependent claims 66-102, which depend from claim 65, are patentably distinct over *Comstock* for at least the same reasons as their ultimate base claim and further in view of the novel features recited therein.

For example, regarding claim 66, *Comstock* describes a technique to trigger the establishment of a Layer 2 tunneling protocol connection between a Mobile Node and a Home Agent based on Mobile IP and then uses this underlying Layer 2 tunneling protocol tunnel to transport datagrams from the Home Agent to the Mobile Node. As such, *Comstock* does not alter the layer 3 routing aspects of Mobile IP. More specifically, *Comstock* fails to teach or suggest that a mobile IP foreign agent would insert and publish a "direct" route for the Mobile Node IP address in its Internet routing table. In *Comstock*, all traffic destined to the Mobile Node is still sent through the Home Agent using the tunneling entry in the mobile IP foreign agent visited list table, i.e., not in a normal layer 3 routing table for which it would publish routes to its neighbors.

Applicants have amended claim 103 to place the features of dependent claim 103 into independent form. No new mater has been added by this amendment. In rejecting claim 103, the Action recites column 1, ll. 45-62 and column 3, ll. 40-45 of *Comstock* as describing the features of the claim. Neither the cited portions nor any other portion of *Comstock* teaches a step of, "hosting a home network of an mobile node using a plurality of home agents, the home agents having a same home agent IP address," as recited in Applicants' claim 103. As such, withdrawal of the claim is respectfully requested. Applicants' dependent claims 104-111, which depend from claim 103, are patentably distinct over *Comstock* for at least the same reasons as their ultimate base claim and further in view of the novel features recited therein.

Applicants have amended claim 112 to place the features of dependent claim 112 into independent form. No new mater has been added by this amendment. In rejecting claim 112, the Action recites column 1, ll. 45-62 and column 3, ll. 40-45 of *Comstock* as describing the features of the claim. Neither the cited portions nor any other portion of *Comstock* teaches steps of, "sending, from a primary home agent, a virtual router redundancy protocol packet with a type

other than 1 to relay mobile node requests; and overtaking the primary home agent with a secondary home agent in response to detecting a failure of a node using the virtual router redundancy protocol packet with a type of 1, wherein a first home agent acts as the primary agent and a second home agent acts as the secondary agent for a same home agent IP address," as recited in Applicants' claim 112. As such, withdrawal of the claim is respectfully requested.

Applicants have amended claim 113 to place the features of dependent claim 113 into independent form. No new mater has been added by this amendment. In rejecting claim 113, the Action recites column 1, ll. 45-62 and column 3, ll. 40-45 of *Comstock* as describing the features of the claim. Neither the cited portions nor any other portion of *Comstock* teaches steps of, "using a care-of address which resides behind a network address translation; rejecting a first registration request from the mobile node when a source address in a header of the first registration request is different from a care-of address within the first registration request; and sending a new challenge," as recited in Applicants' claim 113. As such, withdrawal of the claim is respectfully requested. Applicants' dependent claims 114-117 and new claim 129, which depend from claim 113, are patentably distinct over *Comstock* for at least the same reasons as their ultimate base claim and further in view of the novel features recited therein.

Applicants have amended claim 118 to place the features of dependent claim 118 into independent form. No new mater has been added by this amendment. In rejecting claim 118, the Action recites column 1, ll. 45-62 and column 3, ll. 40-45 of *Comstock* as describing the features of the claim. Neither the cited portions nor any other portion of *Comstock* teaches steps of, "establishing a plurality of mobile IP security associations between a mobile node, a home agent, and a foreign agent using public key certificates; and signing the public key certificates using a mobile service manager," as recited in Applicants' claim 118. As such, withdrawal of the claim is respectfully requested. Applicants' dependent claims 119-128, which depend from claim 103, are patentably distinct over *Comstock* for at least the same reasons as their ultimate base claim and further in view of the novel features recited therein.

CONCLUSION

All rejections having been addressed, Applicants respectfully submit that the instant application is in condition for allowance, and respectfully solicit prompt notification of the same. Should the Examiner find that a telephonic or personal interview would expedite passage to issue of the present application, the Examiner is encouraged to contact the undersigned attorney at the telephone number indicated below. If any additional fees are required or if an overpayment has been made the Commissioner is authorized to charge or credit Deposit Account No. 19-0733, accordingly. Applicants look forward to passage to issue of the present application at the earliest convenience of the Office.

Respectfully submitted,
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